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EDITORIAL

On these pages the editor offers his opinions, unshackled by advertising patrons and unrestrained by anything save a sense of the decent and the truthful - the editor, alone, is responsible for their type, their tone and their tenor.

WORDS, WORDS, WORDS

MOST of the world's misunderstandings come because of an ignorance of the value of words or because of a wilful or witless misconception of their intent and arrangement. There are words that weep and words that laugh, words of learned length, winged words and burning words, airy words and heavy words, words, true and false, brave and cringing, sweet and sour—words, words, words.

The male American of average intelligence is said to have at his disposal a collection of some seven thousand words,—more than there is in the Old Testament,—but strangely enough the female of the indigenous species has but five thousand at her command.

But what a command!

And what a rapid turnover of stock!

The origin of words within a spoken language mirrors better than most men know, the course of history and the curve and verve of evolution.

Whence came our simplest words?

Whence, indeed, came first, the word *word?*

Consider the way in which English words, of which there are now, according to Max Müller, the celebrated philologist, some 100,000, have changed since Chaucer's day, and through various causes, chiefly because of invasion or invention. In Britain, since the dim Druidic days, layers after layers of words cover the primitive island tongue, as certainly as the seventeen soils of Ur hide the Abrahamic substrate. In the living English tongue of today the initiated may find some British residues. But much easier is it to find the words that came with Caesar's legions and the Danes and the Anglo-Saxons, those flaxen-haired fighters from north of the North Sea. Easier still to find are the verbal increments of William the Conqueror, whose Norman hosts refurnished the isle with romantic actions as well as Romantic words.

Yes, indeed, the English dictionary, especially a good one, is rich in the miniatures of history for those who search aright, and also rich in sheer interest.

Consider, for instance, the devious way in which we came to possess in an vocabulary the pretty word, *sincere.*

When Italian vase makers wished to give semblance of perfection to a cracked or blemished vase, the fault was filled with a wax and covered with paint.

Sine cera (without wax) was the term accordingly applied to a perfect vase, a genuine article. Hence and thence, our word *sincere.*

Abundance, in a wave (from *unda,* wave).

Alarm, which now suggests clockwise, *"out of bed in a hurry,"* was once a *"call to arms"* to meet impending danger.

Alphabet, from the Greek *a* and *b, alpha, beta.*

Anecdote, from the Greek *anekdotos,* which means *"not to be published,"* in which is a gentle hint to those who run their anecdotes to print.

Bank, from an origin which places the Banks of Loch Lomond in the same category with the Federal Reserve Banks, both incidentally being inhabited chiefly by Scots, and the word, as does *"bench,"* coming from a Latin origin meaning a *table,* or *elevation.*

Bless and *Blood* have an odd association, in that blessing once meant *"to consecrate by blood."*

Bombastic, applied to speech, actually means stuffed with cotton (*bombax*).

Calculate, from *calx* or *calculus,* a stone, comes to us from the days when the Romans did their counting with stones or beads on a string.

Curfew literally means cover the fire and go to bed (*couvre-feu,* Fr.).

Symposium, to *drink* together (*potio,* to drink), now, of course, suggesting to *think* together.

And so might we continue, in merry analytic mood, except for the pedagogic fact that there is a better gain in doing this alone.

Let the reader then do his research in words, in a self-conducted fashion. Such research registers more fully.

And let this be the undersigned's contribution to the search, beyond just the mere suggestion. Here, in addition to the Webster,

which still orates and perorates for those who listen, is a list of books where the study of word origins may be profitably conducted.

Anderson—New Study of English Words.

Greenough and Kittredge—The Words and Ways of English Speech.

Marsh—Origin and History of the English Language.

Skeat—English and Iceland.

Trench—Study of Words.

White—Words and Their Uses.

Whitney—Linguistic Science.

Picturesque Word Argus—The Merriam Company.

IVOR GRIFFITH.

Antiseptics and Wound Healing. W. W. Saeger, E. B. Vedder and C. Rosenberg, *Am. J. Surg. 38,* 348 (1937). Artificial wounds made in healthy dogs were infected with staphylococcus aureus. One wound in each dog was treated with a different antiseptic, the other was not treated and was used as a control. Tincture of metaphen and merthiolate, azochloramide and a 2 per cent. aqueous gentian violet solution were used on several dogs. The infected wounds were not improved by any of these antiseptics, due to injury of the cells caused by them. L. G.

Copper Sulphate Treatment of Trichophytosis. J. B. Moloney, *U. S. Naval Med. Bull. 35,* 440 (1937). Fifty cases of trichophytosis (athlete's foot) gave complete cures by daily application of a 20 per cent. solution of dehydrated copper sulfate in glycerin (c. p.). The copper salt was dehydrated by heating over a Bunsen burner to a constant weight and care was taken to preserve the finished mixture from moisture. This was rubbed thoroughly into the affected area by inunction for fifteen minutes every day. The excess was removed and a dry sterile dressing was applied. This preparation is recommended as an alternative treatment in refractory cases. L. G.

ORIGINAL ARTICLES

FIELD TESTS FOR MARIHUANA (Cannabis)*†

By Arno Viehoever

Marihuana, the dangerous habit-forming drug has latterly spread its tentacles, and accelerated its pace, in growth and harm, in our country. Here is a test to determine, quickly, its presence in cigarettes.

THE rapid spread in the illegal sale and use of the Mexican weed "Marihuana" in this country as a dope for chewing, or the smoking of cigarettes makes the need for a quick, simple, positive test, permitting its detection in waste lots, in the field or street an obvious fact.

As there are apparently no combined chemical and biological field tests now available to the narcotic enforcement officials or the analysts called upon to identify away from their laboratory with fair reliability the presence of marihuana in a cigarette or of the weed wherever grown or found, we have tried to devise such tests.

From a literature survey of the physical, chemical and biological data of cannabis and its physiologically active resin cannabinol, and an experimental check-up, the following field tests have been devised.

Chemical Field Test

A portion, one-third or more of a suspected cigarette (without the wrapper), or as little as one-tenth of a gram of the suspected weed, dried and somewhat comminuted, is placed in small, wide-mouthed containers. To it is added, followed by immediate shaking for five seconds, a small but excessive amount in volume of a test solution, consisting of benzene (nine parts) and sodium hydroxide (2 per cent.) dissolved in ethyl alcohol (one part). The liquid is then immediately decanted into an evaporating cup. Very satisfactory results have been obtained when cannabis was extracted with benzene for fifteen to ninety seconds, the slightly yellowish benzene solution then immediately decanted and mixed with equal amounts of alcoholic sodium hydroxide (2 per cent.).

Rapid removal of the solvent prevents the excessive extraction of green and yellow plant pigments (chlorophyll, etc.) which, more

*A preliminary note from the Gross Laboratory for Biological and Biochemical Research, Philadelphia College of Pharmacy and Science.

† Presented before the A. A. A. S., Indianapolis, Ind., Dec. 27, 1937.

TABLE I

CHEMICAL FIELD TEST FOR CANNABIS

	Amount				Time			Remarks
	Drug	Reagent	Benzene	2% Alc. NaOH.	Extraction	Decantation	Color Change	
1	0.1 gm.	3 cc.*			5 sec.	5 sec.	20 sec.	Reagent was added directly to material.
2	" "	3 cc.*			5 "	5 "	25 "	
3	" "	3 cc.*			6 "	5 "	28 "	
4	" "	3 cc.**			5 "	5 "	***	
5	" "		2 cc.	2 cc.	90 "	5 "	30 "	Benzene was added to material and then decanted into NaOH.
6	" "		" "	" "	50 "	5 "	55 "	
7	" "		" "	" "	60 "	10 "	1 min.	
8	" "		" "	" "	20 "	5 "	86 sec.	
9	" "		" "	" "	5 "	9 "	85 "	
10	" "		" "	" "	25 "	3 "	2 min.	
11			" "	" "	30 "	5 "	2 "	
12			" "	" "	40 "	2 "	2 "	
13			" "	" "	10 "	3 "	3 "	
14			" "	" "	10 "	4 "	3½ min.	
15			" "	" "				

*1.5 cc. of a solution containing 1 cc. of 2% alc. NaOH + 4 cc. benzene, and 1.5 cc. benzene.
**1.5 cc. of a solution containing 1 cc. of 4% alc. NaOH + 4 cc. benzene, and 1.5 cc. benzene.
***Delayed color change, but observed within 24 hrs. due to high concentration of alc. NaOH.

or less, interfere with the speedy and unmistakable color development of the test.

A positive test, recognized by the appearance of a color change from slightly yellowish to pinkish within one to two minutes, becoming deeper red after standing a short time, indicated the presence of cannabinol. For its further characterization, spontaneous evaporation of the reddish liquid leaves a dry, partially pinkish to violet, rather persistent, residue. This dissolves to an orange-red solution in strong ammonia and with a violet to almost bluish-violet color in acetone.

Thus we believe to have worked out a field test, which is (1) simple, (2) quick to carry out, (3) reliable (when carried out as indicated above—with access of air and in the absence of an excess of water and carbonates, (4) conspicuous—visible by day and by lamplight, (5) delicate and (6) fairly permanent in liquid, the permanency increasing in the dry residue.

Biological Field Test

For a quick biological field test the residue from the benzene extraction, using 0.1 gram or more of the drug, is freed from benzene by the expediency of blowing on the liquid—to speed its complete evaporation—from a shallow glass cup.

The residue, by trituration is suspended in 2 cc. culture water, or more in case more drug is used. This culture water is poured on daphnia in V-tubes and the narcotic effects noted, which in the above concentration become strikingly noticeable within one hour. There is not only a marked slowing down of the locomotion of the animal but an obvious lowered activity of other essential body organs —a progressive toxic effect leading to death.

The narcotic effect may be depicted by "locomographs," obtained by direct tracing, per fifteen seconds time interval, of both the travel line of the normal daphnia and that of a narcotised animal. These locomographs, described more fully in a later contribution clearly show a progressive reduction in speed and distance of travel, then a lowered level of swimming and, finally, stationary locomotion in the advanced stages of narcosis.

The work, inclusive of the further study of the mechanism of action of cannabis and cannabinol by means of daphnia and other animals, is being continued with the assistance of Mr. Whiteley, working with a grant from the Alumni Association of the Philadelphia College of Pharmacy and Science.

SOME LITTLE BUG IS GOING TO GET YOU!

By T. Swann Harding, Washington, D. C.

A recent article, by the same writer, on the role of chemicals in disease, found so wide a range of appreciative readers, that the editor is pleased to follow it with this presentation in kindred vein.

YEARS ago they sang a song that ran "Some little bug is going to get you—someday!" After that the understanding was you passed on to your reward or punishment. Just about that time the present writer's mother was trundling him around among a lot of children who had mumps.

The idea was that he should go ahead and "catch" the mumps and be done with it. But he just wouldn't take the mumps. Other kids might do as they pleased but no mumps for him. So he passed them up. Then suddenly, spectacularly, and entirely unaccountably he came down with mumps when he was thirty-five, a disaster of which he refuses to speak further.

But why wouldn't he catch the mumps at nine? Where did he get them at thirty-five? Why did he have them then? One can look very wise and say that at nine he had a "natural immunity" to mumps and at thirty-five he did not. It often makes us feel very learned if we can translate our ignorance into polysyllables.

What is natural immunity? Science is not sure. Why will an individual frequently put up a powerful fight and conquer a virulent infection and then suddenly up and die from a minor one during convalescence? Science says that is indeed baffling.

Of course there is such a thing as natural immunity. We just do not yet know *what* it is. Certain Algerian sheep are naturally immune to anthrax. Certain Zebu cattle are immune to dread foot-and-mouth disease which would wipe out the cattle industry in this country but for the alert United States Bureau of Animal Industry. Yet foot-and-mouth disease is mild, not deadly, in many other lands.

The Dutch elm disease, the chestnut blight, and the corn borer all raise hob in the United States, yet they do little or no serious damage in other regions of the world. Have the elms and chestnuts

of Europe, for instance, developed a heritable form of immunity to these diseases which bid fair to wipe out our trees of these varieties?

Some animals seem to have germ-killing blood, or at least their blood carries in it antibodies or antitoxins which can counteract the chemical poisons produced by disease germs. Thus some horses as well as some children have naturally in their blood the antitoxin that combats diphtheria. Therefore they do not contract the disease.

If medicine could just discover the mechanism of this natural immunity and how it is inherited many diseases might be conquered. Advertising has, of course, made us infection conscious. Many are quite neurotic on the subject and take all sorts of absurd precautions to prevent infection.

Yet a wide variety of antiseptics are used before operations by different surgeons in different hospitals all over the land, or by different doctors on wounds. But the mortality is little affected by the nature of the antiseptic used. So much depends upon the individual patient's natural resistance to the particular germ and upon the virulence of the particular strain of germs, and their number, that it makes relatively little difference what antiseptic procedure is used. In some cases no antiseptic at all is almost surely best.

Again, we often read or hear about the importance of keeping the fingers out of the mouth and of cleansing the oral cavity. But there is no effective mouth and throat antiseptic. Moreover the upper part of the digestive tract contains a natural disinfecting agent and the stomach secretes strong acid. Germs that are swallowed are rapidly and quietly killed.

The lower part of the tract is populated by a wide variety of all sorts of germs. Down there things are alkaline instead of acid as is the case up above. The acid line largely determines how high the germs may rise in the tract. If fatigue or nervousness decreases the stomach acid, germs may begin to live in the stomach itself.

If rabbits swallow cholera germs while they are in normal health they do not contract cholera. But if the acid contents of their stomachs and upper intestines are first rendered alkaline, then the germs swallowed will kill them.

Since the stomach contents tend to be less acid in hot than in cool weather typhoid and dysentery are especially prevalent in summer. A diet which will maintain the stomach and upper intestinal tract in a state of normal acidity acts to ward off germ diseases.

Our clean skin is also a good germicide. It is a better germ killer than most antiseptics. The secretions of our mucous membranes, as well as the saliva, and gastric and intestinal juices all kill germs. We also have within us blood cells called leucocytes that eat germs alive.

The disease immunity of an individual is not the same at all times. Certain factors affect it. There is a wide range of individual susceptibility to any germ disease. Then consider the health of the germs themselves. Some strains of germs seem to be weak, ill, or lazy. They are not virulent any more.

An individual may, it appears, get used to certain germs of his own and carry them around constantly. They may look just like very dangerous germs, but they are not dangerous to him. But let him become infected with similar germs of a different strain. Then the resistance he has built up may break down and he may even lose his life.

Temperature also is a factor with which to reckon. A relatively low temperature will protect a lizard from the plague which he contracts readily when kept a little warmer. Birds are immune to the tuberculosis of cows, distinct from the bird tuberculosis from which they suffer, because their body temperature differs so much from that of a cow.

It has long been held that fatigued and undernourished individuals easily contracted infections. But when experimental animals were compelled to exercise until fatigued and were then exposed to infection they did not prove more susceptible than unexercised controls. Studies of human beings working hard so as to induce muscular fatigue did not produce evidence of lowered resistance to infections.

Of course fatigue may have a different effect upon well-trained than upon untrained individuals. The effect of fatigue as a single factor seems hard to isolate. Certainly fatigue does not decrease the antibody content of the blood which determines resistance. But exhausting work immediately following an infection seems to produce drastic results.

Muscular fatigue has not been proved, however, to affect the body defense mechanism against infection one way or the other. Its influence appears to be minor and is difficult to reveal. The manner of infection, individual differences in susceptibility, and the varied virulence of the germs involved again assume more importance.

For a time we heard much about the anti-infective action of vitamin A and occasionally of other vitamins. The effect of vitamin B on immunity remains a mystery. Lack of vitamin C will lower a guinea pig's resistance to certain infections. There is little or no evidence to show that lack of vitamin D predisposes an animal to infections.

A deficiency of vitamin A does produce some loss of resistance to infection in rats, mice and guinea pigs. It may reduce resistance in early life in human beings. But it is not justifiable to call vitamin A "the anti-infective vitamin." Too many other factors may be involved. The normal antibody content of the blood serum and the power of the serum to produce these antibodies seem unaffected by dietary deficiencies.

Scurvy does lower a guinea pig's resistance to infection, hence the administration of vitamin C would be doubly helpful. Birds on a diet deficient in vitamin B are susceptible to anthrax in a way that normal birds are not. But respiratory infections appear to be just about as frequent among well-fed as among deficiently fed infants.

The difference between a liability to become infected and a capacity successfully to fight off an infection after it is contracted must always be borne in mind. Pronounced deficiencies in nutrition may lower resistance to infections, but few studies have been made of partial dietary deficiency—the kind most likely to occur in man—and its effects.

There is no evidence to show that increased feedings with any specific food element—protein, vitamin, mineral or what not—will increase the resistance of normal animals. Results obtained with one species of animals do not apply to other species either. Multiple dietary deficiencies of different kinds are common in man and may be important, but little attention had been paid in animal experiments to the kind of chronic lowered resistance that clinicians often find in children.

There is some evidence that infants are protected from certain infections by diets high in caloric content, vitamins and minerals, but even sex differences in resistance to infection, which are marked, often render such reports meaningless. There is some evidence also that many of the tubercular long lived on deficient diets.

Pigeons when suffering from a deficiency of vitamin B lose their natural resistance to anthrax. Dogs also contract certain infections when low in this vitamin which causes beriberi and pellagra in human

beings. Yet sufferers from these diseases show no increased liability to infection.

An adequate diet before the onset of infection is far more important than the administration of vitamin A after infection sets in. On the other hand it has been shown that well-nourished rats are much more easily infected with foot-and-mouth disease than are ill-fed rats, while there are certain kinds of mouse tumors that will grow only on well-nourished and never on poorly nourished mice.

Cattle also seem to be more susceptible to foot-and-mouth disease when in top nutritional condition than when undernourished. Yet the acquired immunity to mouse typhoid is seriously impaired by starvation. Even if there is food in the stomach of a mouse an hour or so before it is infected, that does not help if it has previously been starved.

Underfed pigs also are more open to infestation with parasites than are the well fed. But this seems to be because the poorly fed animals are more likely to eat incautiously and get hold of food containing various worms and worm eggs than are the well-fed ones.

The germ itself also must be considered. It has to eat and live. It has a nutrition problem too. Germs require specific foods. The reason that human beings only are affected with gonorrhea is that the gonococci require a certain protein in their food that is found only in human beings.

Again meat-eating animals are seldom troubled with certain protozoa that infest the intestines of vegetarians. Animal proteins prevent the infestation. Carbohydrates intensify it. Casein will clear the protozoa out. Human beings can be cleared of these protozoa and cured of distressing symptoms after a week on a meat diet.

More and more evidence accumulates to show the chemical nature of disease. Germs injure us mostly because they produce chemicals that poison us. The viruses, which cause a long list of plant, animal and human diseases actually appear to be non-living chemical substances.

Why not attack diseases by chemical means then? This is what Ehrlich tried to do and the recent success of prontosil against certain streptococcic infections represents a further advance of his idea. Though germs are composed of protoplasm quite as human beings are, Ehrlich hoped to develop various chemicals, usually dyes, that would kills germs and not injure human tissues.

This was all based on the theory that diseases were caused chemically and that proteins had what he called "side-chains." The curative chemical must be able to hitch on to these side-chains in the body and put the deadly protein out of business as a disease cause. This theory worked in the case of syphilis and has other possibilities.

Another approach is by means of vaccines and antitoxins. These usually produce a temporary immunity. But some hold that resistance to smallpox has been built up through the years by all but universal vaccination. Today smallpox is milder even among the unvaccinated than it was formerly. Was a resistance built up and then inherited?

Sheep born of parents that were immunized against anthrax are said to have greater resistance to this disease than other sheep. A distinct resistance to certain serious diseases has also been built up in mice and in guinea pigs.

That brings up an important point. There is a good deal of evidence to indicate that resistance to certain diseases is hereditary. Agriculturalists have been breeding disease-resistant plants for many years. But such resistance is always specific for a certain disease and a certain type of organism.

A sugarcane bred resistant to one disease may prove susceptible to another and be wiped out. Or, again, if one strain of the organism causing the disease is baffled by that sugarcane it may hybridize, and a new strain may appear that will attack it.

Disease resistance has also been bred in animals, but it is specific, not generalized. Lines of mice resistant or susceptible to mouse typhoid have been bred. But not all laboratory mice originally show the same susceptibility to typhoid.

The germs are given them and a line of mice bred from the survivors shows surprising resistance to the disease. Whereas thirty-seven out of a hundred of the original mice died, only fifteen of the hundred will die in this resistant strain under the same conditions of infection.

Another line may be bred from the offspring of the mice which succumbed to the typhoid infection. Very soon a line will appear in which eighty-five to as high as ninety-seven out of every hundred will die when given mouse typhoid. But this resistance is specific. It is not associated with general bodily vigor. Nor will breeding mice of exceptional general vigor improve their resistance to a specific disease.

Nor is it ever possible to breed a wholly susceptible or a wholly resistant strain no matter how long this goes on. Like the writer and his mumps, some mice in the most susceptible line will refuse to take typhoid. So also, no matter how bad the plagues of the past have been, some always resisted, others survived the infection though attacked.

There does seem to be such a thing as species immunity. Hog cholera seems limited to hogs. Man is alone susceptible to a long list of diseases. Under usual conditions it is impossible to infect warm-blooded animals with diseases of the cold-blooded, and vice versa.

The same holds for insects. The larva of the rhinoceros beetle is very susceptible to cholera but is immune to anthrax and diphtheria. Crickets readily contract anthrax but never take bird tuberculosis. The anopheles mosquito, well-known carrier of malaria, is very susceptible to that disease while closely related types of mosquito are immune.

Does this apply also to human beings? When syphilis first appeared in Europe it was a raging and deadly plague. Today it is a comparatively mild disease among the so-called white race which seems relatively immune. It is a pest to other races.

Of course there are scientifically no races of men. There are only sub-species. When we say that the negro is more susceptible to tuberculosis than the white man we are also on dubious ground. In general the former have living conditions far inferior to the latter and that may account for the apparent difference in susceptibility.

Even then negroes do appear to be relatively immune to diseases of the skin, to scarlet fever, diphtheria, measles, erysipelas, chickenpox, and to infections of the nasal and sinus regions. But as if to compensate that are markedly prone to such infections of the respiratory tract as pneumonia, bronchitis, and tuberculosis. Some attribute these differences to differences in tissue structure.

The Japanese are said to be immune to scarlet fever. Smallpox is a relatively mild disease in Mexico, though it was a dread scourge among the North American Indians. Negroes are believed immune to yellow fever. The Eskimo is immune to many diseases in his native habitat which, however, he readily contracts when he visits warmer climates.

Arabians are said to be very susceptible to tuberculosis when they live in cities. New York Russians, Poles and Jews appear to

resist this disease better than do the Irish, though no race is concerned here, strictly speaking. Measles is mild among Caucasians but a severe plague among American Indians and Melanesians. The Chinese are relatively immune to lockjaw. The Malaysians are said to be more susceptible to beriberi than any other people.

But beriberi is a nutritional or a deficiency disease, so that proves only that the Malaysians can stand less denial of vitamin B than some other people, if it proves anything. Really there is not a great deal to prove. On the other hand it is much more important for us to know the limitations of our knowledge than to be certain about so many things that are not so at all. Then, at least, we know in which direction we should progress.

Reverting now to the original question of why the little mumps bug refused to nip the writer when he was nine but flattened him out when he was thirty-five—medical science does not yet know the answer. We have seen herein that only a partial answer is possible. Maybe the bugs were not very virulent one time. Possibly the individual was immune to the specific bug type at the time. Perhaps the bugs were more numerous on one occasion than upon the other.

The whole secret is probably locked in the chemical storeroom. Both germs and tissues are largely composed of proteins. Certain disease-producing agents that we formerly thought alive, but which are now regarded as non-living—the viruses—can, if they get upon the right tissue, assume some of the functions of life. They can grow, reproduce and mutate. Yet they are not actually living things.

Proteins are made up of twenty or more simpler chemicals called amino acids. These form chains. Specific amino acids can be combined in a wide variety of ways; they can take their places at many different points in the complex chains that make up proteins. The possible number of proteins is therefore almost infinite. The figure would at least be astronomical.

In other words it is far from impossible that the protein structure of each individual differs subtly and ever so slightly from the protein structure of any other individual. Bloods are known to type. Blood donors must have blood which types thus and so before it can be transfused into a patient. The proteins of different varieties of wheat have already been shown to differ slightly in their amino acid composition.

May not disease resistance be bound up in that complex protein molecule, a molecule so heavy and complex that it may at times have an atomic weight of half a million or even more? Is it not possible that an infective virus can hitch on to the side chain of only certain types of proteins and that the proteins of individuals differ? Is it not just as possible that the proteins of the same individual differ at different times in life?

Germs are composed in great part of the basic substance composing all living matter, the complex called protoplasm. This, in turn, largely consists of protein. Germs also have to eat, as we have seen. They are particular about their food also, as we have seen. Man has certain diseases because his proteins are the only kind that certain germs really relish.

Then what may we conclude? Natural immunity and disease infection are explicable chemically. The secret is locked within the living cell. It is the secret of protein constitution, a secret that can be learned only when we have much more refined methods than we have today.

The whole science of medicine is tending towards chemistry and away from absolute dependence on bacteriology. Recent work with the minute filtrable viruses causing smallpox, foot-and-mouth disease, infantile paralysis, possibly influenza, and many other ills, has shown that these ultramicroscopic disease-producing agents are proteins. But they become quasi-living on certain tissues.

Plants, animals and human beings whose proteins are of a certain composition resist these viruses; those with proteins of another general type are susceptible. Do we begin to see light here? It seems that we do but science warrants no more positive statement as yet.

ABSTRACTS FROM AND REVIEWS OF THE LITERATURE OF THE SCIENCES SUPPORTING PUBLIC HEALTH

Bacteriology . . . . Louis Gershenfeld, B. Sc., Ph M.
Biochemistry, Nutrition, etc. . . . Arno Viehoever, Ph. D.
Biology . . . . . Marin S. Dunn, Ph. D.
Chemistry . . . . . Arthur Osol, Ph. D.
Pharmacy . . . . . E. Fullerton Cook, Ph. M.
and their assistants

Treatment of Psoriasis With Massive Doses of Crystalline Vitamin D and Irradiated Ergosterol. E. T. Ceder and L. Zon, *Public Health Reports 52,* 1580 (1937). Psoriasis is recognized as one of the most frequent disorders of the skin. The numerous concepts regarding its nature have led to the use of a variety of therapeutic agents only a few of which have been found to afford any benefit to the majority of cases.

In the past decade viosterol in small doses has been employed in the treatment of psoriasis without signal success although Krafka (*J. Lab. and Clin. Med. 21,* 1147 (1936)) reported benefit following larger doses of viosterol in three cases. Only in recent years have the more potent irradiated ergosterol products been available and been found to be apparently safe. The unfortunate results in the past are said by Bills to have been due to the presence of toxisterol which is now absent in commercial products. Furthermore, the reports in the literature show that the deleterious effect of massive doses of irradiated ergosterol have occurred in children and in rats which have since been shown to be much more sensitive than the adults of either species.

The authors while employing large doses of vitamin D averaging 300,000 units daily in the treatment of chronic arthritis observed a complete involution of a coexisting psoriasis. This led to the use of this substance in the treatment of fifteen cases of chronic widespread psoriasis. Of the total number eleven obtained a complete involution in a maximum of twelve weeks, while two obtained only a partial benefit and two showed no benefit. The results indicated further-

more that such massive doses appear to be relatively safe, inasmuch as in the few instances of hypervitaminosis produced, no extreme symptoms developed. The study surely indicates great promise in the treatment of psoriasis by this method. L. F. T.

Scoops as a Source of Contamination of Ice Cream in Retail Stores. A. J. Krog and D. S. Dougherty, *Amer. J. Pub. Health 27,* 1007 (1937). A comparative study of the results of routine ice cream analyses conducted at Plainfield, N. J., over several years showed that the bacterial counts of loose ice cream were in most instances considerably higher than those of the same product manufactured and packaged at the same plant and dispensed by the same dealer.

A comparison study of the bacterial count of loose ice cream collected with the vendor's scoop and with a sterile spoon was made with the following results:

Samples taken with vendor's scoop	Samples taken with sterile spoon
640,000	8,000
320,000	23,000
512,000	3,000
158,000	28,000
121,000	3,000
113,000	10,000
19,000	2,000
175,000	11,000

Further examinations led to the following interesting conclusions:

1. The amount of ice cream in the can has a direct effect on the count since the freshly opened can would not have been subjected to the high degree of scoop contamination as a nearly empty can.

2. The time of the day samples were taken influenced the count due to the fact that dippers and containers were usually washed in the morning after the establishment was opened.

3. The physical condition of the scoop was important, those mended with plugs of cloth and those never properly washed giving higher contamination.

The usual arrangement of keeping scoops in a container of water is objected to as it provides in the course of use an excellent medium for the rapid multiplication of bacteria. A new method of keeping scoops by placing them in a dry rack protected from flies, dust, etc., and washing them in running water both before and after use was found to greatly lower the bacterial content of ice cream dipped in this manner. Ice cream retailers should be interested in this worthwhile recommendation. L. F. T.

The Isolation of Crystalline Vitamin A. H. N. Holmes and R. E. Corbett, *J. A. C. S. 59,* 2042 (1937). The authors report the isolation of crystals of vitamin A from three different samples of fish liver oil. The crystals when crystallized from methanol at very low temperature appear in beautiful rosettes or radiating clusters. They are optically inactive and isotropic, melting point 7.5-8.0 degrees. The extinction coefficient ($E\ {}^{1\%}_{1\ cm.}$) was found by Darby of Columbia to be equal to 2100 and by biological assay Dutcher and Guerrant of Pennsylvania State College found it to contain considerably above 2,265,000 and somewhat below 3,400,000 international units per gram. The molecular weight, determined by the freezing point lowering of cyclohexane, was found to be about 294. This is less than 3 per cent. above the weight corresponding to the formula $C_{20}H_{30}O$. The difference is explained as probably due to the rapid change in the structure of the vitamin in solution through oxidation.

L. F. T.

Safeguards Proposed to Govern Distribution of Dangerous Drugs. In a report submitted to Congress by the Secretary of Agriculture as a result of the recent deaths resulting from the use of elixir of sulfanilimide, four recommendations are made as follows:

1. License control of new drugs to insure that they will not be generally distributed until experimental and clinical tests have shown them to be safe for use. The definition of what constitutes a new drug should include (a) substances which have not been used sufficiently as drugs to become generally recognized as safe, (b) combinations of well-known drug substances where such combinations

have not become generally recognized as safe, and (c) well-known drug substances and drug combinations bearing label directions for higher dosage or more frequent dosage or for longer duration of use than has become generally recognized as safe. Exemption should be made for new drugs distributed to competent investigators for experimental work. A board of experts should be provided who will advise the Secretary of Agriculture on the safety of new drugs.

2. Prohibition of drugs which are dangerous to health when administered in accordance with the manufacturer's directions for use.

3. Requirement that drug labels bear appropriate directions for use and warnings against probable misuse.

4. Prohibition of secret remedies by requiring that labels disclose fully the composition of drugs. Many foreign countries now impose this requirement. Many drugs manufactured in the United States are exported to such countries under labels bearing such disclosure. The same drugs are sold to our citizens under labels that give no hint of their composition. L. F. T.

The Stabilization of Adrenalin Solutions. B. Sjögren and H. Larsson, *Farmacevtisk Revy 309* (1936), through *Pharmaz. Zentrh. 78*, 695 (1937). The question of the stabilization of adrenalin solution was studied and sodium metabisulfite demonstrated the best stabilizing effect of all the inorganic reducing agents. An adrenalin solution when properly prepared with this substance is stable almost indefinitely. The sodium metabisulfite is, even in the concentration of 0.1 per cent., quite efficient and it is likewise of value since it is only very slightly toxic, the adrenalin is in no way chemically altered, nor is its pharmacological or physiological action. L. F. T.

Signs of Vitamin A Deficiency in the Eye Correlated With Urinary Lithiasis. W. J. Ezickson and J. B. Feldman, *J. A. M. A. 109*, 1706 (1937). The authors investigated any possible relationship between vitamin A deficiency and upper urinary lithiasis in human beings. A group of individuals who had or did have renal or

uretal calculi were tested for vitamin A deficiency by the dark adaption or light sensitivity test. Of twenty-five patients with urolithiasis, twenty-four were found to have pathologic dark adaption varying from mild to severe and investigations disclosed dietary deficiency in vitamin A in many instances. The patients were treated with doses of vitamin A ranging from 13,000 to 52,000 units daily and, in addition, they were placed on acid ash or alkaline ash diets depending on the urinary pH. The results were in accord with the clinical studies reported by the Council on Pharmacy and Chemistry of the American Medical Association, namely, that vitamin A fails to correct dark adaption where it exists together with urolithiasis. By this study it seems evident that the vitamin A deficiency responsible for lack of dark adaption occurs in association with renal lithiasis, but such deficiency is dependent on lack of assimilation or utilization of this substance rather than on dietary deficiency. The possibility that lack of vitamin A assimilation or utilization and urinary lithiasis may have a common metabolic basis is suggested. L. F. T.

Vitamin A Content of Cod Liver Oil. A Comparison of Spectrophotometric and Chemical Methods. A. D. Holmes, F. Tripp and G. H. Satterfield, *J. Ind. and Eng. Chem., Analytical Edition 9,* 456-57 (1937). Thirty-two samples of cod liver oil have been examined for their vitamin A potency, using the Hilger vitameter E value and the antimony trichloride blue value methods. A comparison of the results obtained by the two methods indicated that in general they were of the same order. The oils that gave high E values also gave high blue values, while those with the lowest E values also gave the lowest blue values. The ratio blue value to E value for most samples was between nine to one and eleven to one.

The results obtained for free fatty acid and unsaponifiable material showed that the amount of these materials present in an oil is not correlated with its E value or blue value; no consistent relationship has been found between vitamin A potency of an oil and its content of free fatty acid or unsaponifiable material. L. A. R.

Nicotine Thiocyanate—A Contact Insecticide. J. S. McHargue and R. K. Calfee, *J. Ind. Eng. Chem. 29,* 1232 (1937). Nicotine thiocyanate was prepared by decomposition of ammonium thio-

cyanate. The compound is found to be very effective as an aphidicide and, in sufficient concentration and with a suitable spreader, controls red spider. It is decomposed by the more positive ions in solution, losing much of its effectiveness, and is then capable of serious foliage injury. Practical spreaders for use with this insecticide are discussed. L. J. K.

Synthetic Aliphatic Penetrants. B. G. Wilkes and J. N. Wickert, *J. Ind. and Eng. Chem. 29,* 1234 (1937). During the past few years an increasing interest in the use of compounds possessing surface activity has taken place. Among such compounds the sodium secondary alcohol sulfates have recently become available to industry in quantity. The chemical structure of these and a number of other compounds possessing surface activity are described. A comparison is made of their relative wetting action, surface tension and lime soap dispersibility under neutral, acid and alkaline conditions. In addition the authors describe some commercial applications in which these sodium secondary alcohol sulfates are or can be used to advantage. L. J. K.

Sterilization of Aqueous Solutions of Sodium Phenobarbitone. H. W. Tomski and L. J. Waller, *Pharm. J. 139,* 3859 (1937). The instability of aqueous solutions of sodium phenobarbitone having been confirmed by Nielsen (1933), the authors carried out an investigation to determine the loss of the drug when different methods of sterilization were applied to a solution. The loss was estimated by the volumetric method of Hegland (1935) in which sodium carbonate solution is added to the barbiturate solution, the resulting mixture being titrated with N/10 $AgNO_3$ until the faint opalescence produced does not disappear on shaking. Experiments were also made to determine the loss of sodium phenobarbitone when N/10 sodium carbonate is added and the resulting solution subsequently sterilized. In the sterilizing of a 20 per cent. solution of sodium phenobarbitone, using the various methods of sterilization, the following results were obtained: By autoclaving, 115 degrees C. for thirty minutes, loss of 19 to 20.5 per cent.; heating at 80 degrees C., under the process of tyndallization, loss of 6 to 7 per cent.; boiling

for fifteen minutes, loss of 1 per cent.; heating at 100 degrees C. for one hour, loss of 10 per cent. When subjected to any of the above methods of sterilization the 20 per cent. solutions formed a white precipitate of phenylethylacetylurea on cooling.

From the experiments the authors recommend, solutions of sodium phenobarbitone for injection should be prepared from a sample yielding a solution of a pH value as low as possible and should be sterilized by filtration only. The solutions should be stored only for a short period and in a cool place. H. P. F.

Bacterial Filtration. H. Berry, *Pharm. J. 139,* 3853, 3854 (1937). The sterilization of pharmaceutical solutions by filtration although having advantages over other processes offers many serious objections. The list of thermolabile substances is increasing and dispensing them in sterile solutions with maximum activity is a difficult one. A faulty autoclave may be more easily detected than a faulty filter, a slight leak in a filter can only be detected by a bacteriological test of the filtrate. Most pharmacopœias which admit the process of filtration for sterile products include a sterility test of the final product. The major objections to the use of the bacterial filter are: (1) Mechanical construction defects—weakness of joints of connecting parts. (2) Adsorption—lowering of the concentration of the filtrate by adsorption of the medicament on the filtering material. This varies with the medicament present. Adsorption will generally be at a minimum with collodion membrane filters and at a maximum with kieselguhr filters. (3) Yielding of alkali to the filtrate and alteration of pH of the latter—this may cause inactivation of certain substances as pituitary or insulin or may cause precipitation of alkaloids from solutions of alkaloidal salts. The Seitz filter may be open to this objection. (4) The yielding of small solid particles or floccules to the filtrate—the Seitz filter is open to this objection. It is often necessary to include a second clarifying filter in the system. (5) Difficulty of cleaning the filter—porous porcelain and kieselguhr filters are open to this objection. If it is necessary to heat the filter to a high temperature, cracking may result.

The following important factors must be considered in the mechanism of filtration: (1) The question of the actual size of the pores of the filter. By reducing the pore size filters can be made to

retain the bacteria but the rate of flow will be low, by increasing the thickness of the filter plate the pore size can be increased and consequently a greater rate of flow. The latter type generally has the disadvantage of high adsorptive properties. (2) The factor of surface equilibria between the substance of the filter and the dispersed phase (the bacteria) owing to adsorption and cohesion. (3) The reaction between the filter material and the continuous phase of the solution, in some cases causing swelling of the filter material. The Seitz filter is said to owe its efficiency to the latter principle.

The new 5/3 sintered or frittered glass filter seems to possess advantages over the older types of bacterial filters such as the Pasteur-Chamberlain, Berkfeld, Doulton and Mandler. Although the author cites no experiments regarding its power of adsorption, he states the apparent advantages of the Jena 5/3 filter to be: (a) it is made entirely of high resistant glass, the filter being fused into the glass holder, which reduces one risk of leakage. (b) It can be treated as glass, perfect cleaning being accomplished by using a concentrated solution of sulfuric acid heated to 80 degrees C. and containing a little sodium nitrate. Neither the efficiency or pore size is affected by this treatment.

In making the estimations of the size of the maximum pores for comparison with the maximum pore size of the older type filters the method of Bechold was used. This consists of pouring pure ether into the filter and forcing air through the plate from below; by placing a mercury manometer in the circuit it is possible to note the pressure at which the first bubbles of air appear through the plate. Bechold's formula for determining the pore size and a drawing of the apparatus are included in the article.

Using this method the Jena 5/3 filters compared favorably in maximum pore size with the other filters tested, more consistent results were obtained however by using carbon tetrachloride than with ether. Tabulations of the pore sizes of the Pasteur-Chamberlain, German Berkfeld, Mandler, British Berkfeld, Doulton, Berlin Porcelain Co. (Massen type) and the Jena 5/3 type filters are included. From these tabulations the pore values of the L 5 Pasteur-Chamberlain and the porous porcelain English Doulton filters appear approximately equal—about 1.3 μ, while the Mandler (fifteen pound) has a value about 2.6 μ. The Jena 5/3 shows pore values between 3.2 μ and 0.74 μ.

From bacteriological tests the Jena 5/3 filters were found efficient when the pore value did not exceed 2.5 μ.

In making the bacteriological tests, nine Jena 5/3 filters were assembled, autoclaved at 115 degrees C. for one hour, 100 mil quantities of water containing Chr. prodigiosum were drawn through and the filtrate tested for sterility. This organism was chosen because of its small size and ease of cultivation. The apparatus was next rinsed with water, again autoclaved and the filtration repeated. Each filter was used and autoclaved fifty times.

From the results of the sterility tests as shown in the table it was found that those filters which stopped the organism on the first filtration did so on every subsequent occasion, autoclaving fifty times did not affect their efficiency. Moreover the filters, although cleaned five times with the strong sulfuric acid solution, at the end of the operation showed no change in maximum pore size. In these tests several of the older types of filters were broken while the nine Jena 5/3 filters were still intact, showing sufficiently strong construction to withstand autoclaving and general handling. H. P. F.

The Preparation of Dextrose Solution for Intravenous Administration. W. J. Elser and R. G. Stillman, *Am. J. Clin. Path. 7*, 221, 307 (1937). An investigation into the causes of reactions following the intravenous injection of dextrose solutions reveals the following factors: water not freshly distilled; particulate matter found in the solution; improperly prepared rubber tubing; too rapid or irregular injection of the fluid; unskillful performance of the operation; susceptibility of the patient; and a too high or a too low temperature of the solution. The following factors, though said to be the cause of the reactions, are probably of little importance: the pH and the age of the solution and the use of glass other than Pyrex. A method is given for the preparation of a 50 per cent. solution of U. S. P. dextrose which gives a solution that is clear, colorless and sterile and does not produce reactions. The features of this method are the use of only freshly distilled water, produced in a properly designed and operated still (double or triple distillation is not essential), and the clarification and sterilization of the solution in this method is by filtration through a bacteria-proof filter (Berkefeld). The dextrose

is at no time subjected to the action of heat which brings about changes in this material. This 50 per cent. solution has been shown to possess bactericidal power against the vegetative forms of the common pathogens. L. G.

The Sterilization of Aqueous Zinc Sulfate and Potassium Aluminum Sulfate Solutions. A. Torstensen-Dalsgaard, *Farm Tids 271* (1936), through *Pharm. Zentralhalle 78,* 646 (1937). Aqueous solutions of zinc sulfate and alum produce precipitates when heated for more than five minutes at 80 degrees C. in ordinary glass. The zinc salt can be autoclaved even for two hours in Pyrex or Jena glass without alterations of the pH. Alum solutions (10 per cent.) in Pyrex or Jena glass produce a precipitate when heated at 100 degrees C. or when autoclaved but not when heated for five minutes at 80 degrees C. Eye drops containing alum may be made by sterilizing concentrated solutions for five minutes at 80 degrees C. and diluting with autoclaved water. L. G.

Giemsa Preparation for Staining Blood Films. R. Hewitt, *Science 86,* 548 (1937). There have been many varieties of blood stains proposed, and each stain has its peculiar advantages. In a large proportion of clinical laboratories, where many blood films are stained daily, Wright's stain is generally found to be satisfactory and is relatively inexpensive. However, some laboratory workers prefer the more precise results obtained from other stains in the Romanowsky series. Giemsa's modification has been found to be very satisfactory as a routine blood stain as well as for blood parasites. Its chief disadvantage is its cost.

For several years the author has prepared blood films containing avian malarial parasites, using the Giemsa method exclusively. Ready prepared solutions of Giemsa generally cost about $12 per eight-ounce bottle. The cost of eight ounces of prepared Wright's stain, on the other hand, is but $2.85. This difference in price means a great deal to private laboratories and to many institutions. Some workers, even though preferring the Giemsa method, use Wright's stain regularly to reduce the expense involved.

The following method for preparing Giemsa stain, although not conforming to the usual technique suggested, has been found to be very satisfactory by the writer. The resulting stain costs about $3.25 per eight ounces and gives uniformly well-stained blood films. In laboratories where a great deal of stain is used the cost of Giemsa so prepared is little more than Wright's.

Azur II—Eosin	3.0 gms.
Azur II	0.8 gms.
Glycerin (c. p.)	250.0 gms.
Methyl alcohol	250.0 gms.

Absolute (neutral), acetone free.

Dissolve the Azur II and Azur II-Eosin in the methyl alcohol in a Erlenmeyer flask. Shake well for fifteen minutes, add glycerin, shake for ten minutes and filter through a moderately fine grade of filter paper. Collect the filtered stain in a bottle and discard the undissolved residue.

There is generally quite a bit of stain that does not dissolve. This, however, seems to make very little difference in the character of the resultant stained blood films. Results have been found equally satisfactory with human blood and avian blood. Malarial parasites are brought out sharply with distinct differentiation of chromatin and cytoplasm. L. G.

Pneumonia Due to Type V Pneumococcus. M. B. Rosenbluth and M. Block, *Arch. Internal Med. 60,* 567 (1937). Of 1850 cases of pneumococcic pneumonia observed during the past eight years, 3.5 per cent. were type V. The mortality rate in thirty-nine cases of serum-treated type V pneumococcus pneumonia was 26 per cent. compared with 29 per cent. type V cases not treated with serum.

L. G.

Community Provision for the Serum Treatment of Pneumococcic Pneumonia. Report of the Committee on Public Health Relations of the New York Academy of Medicine by a Special Sub-committee. R. L. Cecil, J. G. M. Bullowa, H. T. Chickering and E. H. L. Crowin, *Bull. N. Y. Acad. Med. 13,* 557 (1937). This report covers pneu-

monia statistics, the history of pneumonia research, organization of pneumonia control in Massachusetts and New York, serum production in New York City and recommendations for further steps by the community to control the disease. The variation in the prevalence of pneumococcus types from year to year makes it difficult for health laboratories always to have adequate amounts of the different serums. Type I is consistently most prevalent. Second place has been held at various times by types III, VII and VIII. L. G.

Gas Gangrene—Its Prevention and Treatment. B. Malone, *J. Tennessee M. A. 30,* 402 (1937). The polyvalent sera marketed in this country are not reliable. They were found to be unreliable in the treatment of gas gangrene. L. G.

Diphtheria Immunization: New Diluted Shick Fluid. C. R. Merrilless, *M. J. Australia 2,* 251 (1937), through *J. Am. Med. Assoc. 109,* 1492 (1937). Five thousand children were tested with a new diluted Shick toxin injected intradermally in the usual way in doses of 0.2 cc. The diluent consists of 8.4 gm. boric acid, 15.9 gm. Na Cl, 5.7 gm. borax and 5 gm. purified gelatin in two liters distilled water. A normal Shick reaction with the new preparation presents on the fifth day a striking patch of redness on a normal skin with practically no infiltration, no areolar paleness, and no tenderness or pain. L. G.

Accidental Smallpox Vaccination and Eczema Vaccination. G. W. Graves and C. Dowman, *New York State J. Med. 37,* 1833 (1937). Two cases of eczema vaccinatum, one of which was fatal, were reported. The presence of eczema in the individual or in members of the family is recommended as a contraindication for vaccination. L. G.

Diphtheria of the Skin. I. Pincus, *New York State J. Med. 37,* 1938 (1937). A case of diphtheria of the skin (a rare condition) was finally diagnosed after eight weeks. Administration of diphtheria antitoxin and application of 1:5000 potassium permanganate solution resulted in an uneventful recovery. L. G.

Antiseptic Properties of Human Milk. H. Dold, E. Wizemann and C. Kleiner, *Z. Hyg. Infektionskrankh 119,* 525 (May, 1937), through *J. Am. Med. Assoc. 109,* 1640 (1937). Human or cow milk added to an equal volume of agar did not support the growth or allowed only slight growth of B. diphtheriae, Staph. aureus, B. coli, B. prodigiosus, B. pyocyaneus, B. anthracis, streptococci, and unidentified wild yeast. The factors in human milk inhibiting bacterial growth ("inhibins") were inactivated by heating at 56 degrees C. for thirty minutes or by standing twelve to twenty-four days at 5 degrees C., but not by repeated freezing and thawing. The "inhibins" in cow's milk were not inactivated by heating at 80 degrees C. for seven minutes but were destroyed by heating at 85 degrees C. for seven minutes. Attempts have not been made to identify the natural antiseptics. L. G.

The Choice of Disinfectant for Use in Hospitals. R. Hanne, *Pharm. Ztg. 82,* 957, 975 (1937). Disinfectants for hospital use are considered. In their purchase, factors to be noted are: toxicity, potency, cost, odor, color, effects on skin and instruments, stability, and the fact that the disinfectant action may be inhibited when in use. L. G.

Misce et Fiat Collyrium. R. M. Nacca, *Druggists Circular 81,* 18 (1937). The preparation of solutions for use in ophthalmology are considered, emphasis being placed on isotonic eye solutions. The amount of salt necessary for rendering solutions isotonic is given. Two methods are described for buffering eye solutions. Formulae are presented for some of the more commonly used medicinals in ophthalmology. L. G.

Sulfanilamide and Another Group of Diseases. Science Supplement 86, 12 (1937). Reports of successful use of sulfanilamide in a new group of diseases were made by Drs. Perrin H. Long and Eleanor A. Bliss, of the Johns Hopkins Hospital, Baltimore, at the meeting of the Southern Medical Association in New Orleans. The

first American report of the use of this powerful remedy was given by these same investigators at the meeting a year ago. At that time they reported cures of erysipelas, childbed fever and other streptococcus-caused ailments with sulfanilamide treatment. This year they reported its healing effect in the painful and generally stubborn illness due to infection of the urinary tract. Cases that had lasted for from five to seven years and in which all other forms of treatment had failed were cured by sulfanilamide. The drug, Dr. Long said, kills practically all of the germs which commonly infect the urinary tract.

The all important factor in treating these conditions is to obtain the proper concentration of the drug, that is, to get enough of it into the urinary tract to kill the germs. The amount necessary can be determined by laboratory tests. Laboratory tests, also, can show whether or not sulfanilamide will cure cases of streptococcus infections, the condition for which the drug was first tried. There are many varieties of streptococci. That not all are susceptible to the action of the drug is shown by a research reported by Drs. Long and Bliss and their associate, W. H. Feinstone.

Identification of the particular streptococcus that is causing illness in a particular patient is of prime importance. The investigators described how these germs may be identified and which one can be killed by sulfanilamide. Group A and Group B hemolytic streptococcal infections in man can be cured by the drug. Good results have been obtained in treating Group C hemolytic streptococcal infections in dogs and horses. Group D hemolytic streptococcal infections in man are unaffected by the drug. Alpha streptococcal infections, the kind found in the heart disease known as subacute bacterial endocarditis, are in general not affected by sulfanilamide treatment.

Cases of gonorrhea cured within three days by sulfanilamide were reported by Professor E. P. Alyea, of the Duke University School of Medicine, at the meeting. Professor Alyea treated 158 patients with this drug and four-fifths of them made rapid recoveries. Out of 1000 cases treated by the generally accepted method of a few years ago, nearly half had complications. Sulfanilamide was only introduced into American medicine a year ago and so far 830 cases of gonorrhea treated with it have been reported in scientific journals. In these 830 cases not a single complication of gonorrhea has been reported. Professor Alyea called this "a most striking result."

L. G.

SOLID EXTRACTS

By Ivor Griffith, Ph. M., Sc. D.

Despite the form in which this information is presented it may be accepted as trustworthy and up-to-date. Original sources are not listed but they may be obtained upon request.

Garlic, as a medicinal, has enjoyed throughout the ages a considerable reputation. It is a sedative and alterative. But its real service to that portion of the human race that appreciates it, is as a savor, not as a drug or a scent. Five pounds of garlic are used daily in the Waldorf Hotel kitchens. Every week, Alfredo Maspero, the garlic king, handles for New York about twenty-five tons of the bulbs. He *knows* by rich experience, that garlic belongs to the lily family. Most of America's garlic (twenty million pounds a year) is grown in California.

Farmers hate garlic, because its odor contaminates milk, even though the cow does nothing worse than smell the weed.

Singers love it because it helps the voice, hence the success of cantors and Italian tenors in the field of music!

Actually, garlic, discriminately used, is the chef's best friend and the epicure's fond delight.

And today, since a gurgle and a gargle, with Dakin's solution, hides its announcing malodor, the garlic gourmet may safely ride the trolley without a grain of guilt.

Thymol has considerable application in medical practice, as an antiseptic, alone, or tied to iodine, as thymol iodide. Latterly, however, it is finding a wider range of usefulness in the industries. It is of value in preventing mildew growth, having been recommended for this purpose some time ago, by the Scientific Section of the National Paint, Varnish and Lacquer Association, especially for indoor and

industrial paints where the use of highly toxic metallic salts would not only be undesirable, but dangerous.

The paper industry has also found thymol of value as an anti-mold agent and its use seems to be increasing in that industry. It also has some stabilizing value such as in soaps and in face creams which may have a tendency to discolor and become rancid.

London has finally completed the terminal chloramination of its entire river-derived water supply, totalling about 250 million gallons a day. In good English, it might be now said with respect to the London supply, that both autochthonous and allochthonous pollutions have been mastered by physical and chemical antidotes.

At the present time, for days on end, every gallon of Aqua Londoniensis is 100 per cent. pure on a *coli* basis.

Which is quite an achievement! (Of course, we must recall that, despite the traditional tie-up of the Britisher to his bath, the average per capita consumption of water by the American city dweller is much higher than for the average Londoner.)

Many persons believe that typhoid-free water, containing other bacteria such as the b.coli *is not a health hazard. They point out the fact that our intestinal tract abounds with such bugs.*

But think again! Those waters with a high colonic count may be used to dilute and cool a young baby's bottle or the beef tea of an invalid. Should such be not consumed at once the poor person does not pay for replacement, but warms up the mixture, with the poisons resulting from the growth of these organisms, and possibly teeming with bacterial life, in other words, a laboratory culture. This is something to pause and ponder over, that a single organism may become two in twenty minutes or a quarter of a million in six hours, and that many of the filtrates derived from substrates of common organisms are definitely poisonous and dangerous to man.

Should a prescription for *USNEA* be brought to the modern pharmacy, there might be some difficulty in securing the drug. This is how Pomet's History of Drugs (early eighteenth century) describes it:

Casually we are told that supplies of it are usually obtained from the public executioner. The skull, hair and urine, and other parts and secretions are also recommended for various purposes, but the most interesting product from this source is our *usnea,* consisting of the moss which grew upon the human skull, particularly from individuals who had died violent deaths. If you wonder where supplies of such a drug could come from the question is answered by recalling that in England for centuries the bodies of criminals who were hanged were suspended in chains at the crossroads as a warning or deterrent to criminals. The text states casually that "The English Druggists bring these heads from Ireland, where they frequently let the bodies of criminals hang upon the gibbet until they fall to pieces, and you may see in the druggists' shops of London some of the heads entirely covered with moss."

Germany is undoubtedly the greatest nation in Europe on applied research. The nature of the people helps make this possible. It took fifteen years of hard, tedious plodding and 30,000,000 gold marks to produce the formula for aniline dyes.

The mammoth German dye trust is the I. G. Farben Industrie Co. at Ludwigshafen. Here buna *and synthetic gasoline, products of coal, were discovered and developed. Germany being a country with plenty of coal, but not very good climate or soil, is fortunate that her scientists have been successful in working with coal for so much of her synthesis.*

Here they have developed ceramic ware, similar to beetle ware, but cheaper and more transparent; molybdatrot, *a new colored paint as fast as lead chromide and not subject to darkening.*

They developed I. G. Wax, the use of which is now broadening so rapidly. It is used to give a better surface to paper; the quality of pulp or rag going into the paper can be of a considerably lower grade if I. G. Wax is mixed with it. This product also develops more beautiful colorings when mixed with paraffin and is the substance that prevents paraffin candles from bending in warm weather.

Another new product developed is locron, *used to make cloth and building materials fireproof. A method has been developed to add pigment to it so that it can be applied as paint to furniture and woodwork—painting and fireproofing in one operation. At present the cost is twice that of ordinary paint, but it will decline with production.*

The Kaiser Wilhelm Institute for Wood Research at Eberswalde is doing considerable work with plywood impregnated with metals, and has developed a beech plywood impregnated with bakelite which is very strong. They have also developed what they call a radium wood which has been impregnated with oil. They have developed a new wood for beer barrels. This is a plywood, the center of which is beech, with both surfaces oak. The reason for the development of this wood was to enable them to save oak, but, through this plywood, they have also obtained a barrel that wears better.

Here they use the roots of pine trees, which are being dug up all over Germany, to obtain resins. They also use pine for turpentine and artificial silk. There is a new wood development in flooring, perfected in the United States, whereby the floor and the carpet are laid in one piece, joined together like a plywood. No dust can come between, and, inasmuch as dust causes much of the wear in carpets, this point was considerably stressed. It costs less to lay than when each material is handled separately, and it has other advantages which they believe will ultimately put it in general use for homes, office buildings and auditoriums.

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TITLE AND SUBJECT INDEX FOR 1937

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Prescriptions for Profit

ONLY a pharmacist can conduct a pharmacy. The prescription department is his exclusive franchise. There are other good reasons why pharmacists should exert every effort to increase prescription volume. This field of endeavor is less competitive than others. It responds to stimulation. Prescription business is profitable business.

A first essential is to have what physicians need, a second, to stock lines and items that carry prestige, meet ready acceptance, and for which there is a created demand. Major effort can safely be expended on products bearing the Lilly Label. They qualify. They are backed by a fine reputation and they offer something definite and tangible besides low price. These are but a few of the requisites that are met when you feature Lilly Products.

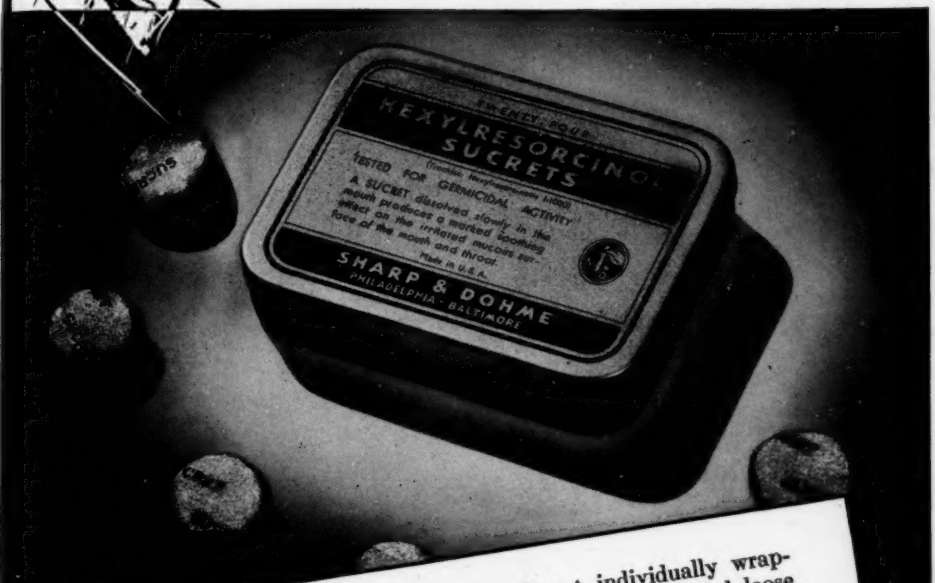
Lilly — ALWAYS THROUGH THE DRUG TRADE

ELI LILLY AND COMPANY

INDIANAPOLIS, INDIANA, U. S. A.

Hexylresorcinol SUCRETS

Promptly Soothe Irritated Throats



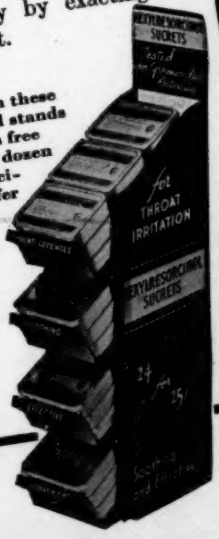
THE season of throat irritation is here again!

Hexylresorcinol SUCRETS displayed in this attractive new counter stand are a "pick-up" item for every customer with an irritated throat condition. Dissolved slowly on the tongue, a Sucret produces a marked soothing effect on the mucous membrane of the mouth and throat . . . promptly allays that "scratchy" feeling.

Hexylresorcinol SUCRETS are convenient to carry. They are packed 24 in a neat metal box, every Sucret individually wrapped. They may be carried loose in the handbag or pocket, or kept at the bedside.

Every lot of Hexylresorcinol SUCRETS is standardized for germicidal activity by exacting bacteriological test.

Display SUCRETS in these attractive new metal stands . . . the stand comes free with an order of six dozen or more Hexylresorcinol SUCRETS. (Offer expires December 31.)



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